Central Basin and West Basin Municipal Water Districts

Proposal for
Proposition 13
Urban Water Conservation Program Grant Funds

Residential EvapoTranspiration (ET) Controller Program

Presented to:

California Department of Water Resources
Office of Water Use Efficiency
1416 Ninth Street, Room 338,
Sacramento, California 95814
Attention: Marsha Prillwitz

Table of Contents

A-1 Urban Water Conservation Grant Application Cover Sheet

1. Applicant (Organization or affiliation): Central Basin Municipal Water District
West Basin Municipal Water District

2. Project Title: ET controller Installation Program

3. Person authorized to sign and submit proposal:

Name, Title	Darryl G. Miller, General Manager
Mailing address	17140 S. Avalon Blvd., Suite 210 Carson, CA 90746
Telephone	(310) 660-6258
Fax	(310) 217-2414
E-mail	darrylm@wcbwater.org

4. Contact person (if different):

Name, Title	Gus Meza, Conservation Coordinator
Mailing address	17140 S. Avalon Blvd., Suite 201
Telephone	(310) 660-6209
Fax	(310) 516-1327
E-mail	gusm@wcbwater.org

5. Funds requested (dollar amount): $312,340

6. Applicant funds pledged (local cost share) (dollar amount): $138,000

7. Total project costs (dollar amount): $450,340

8. Estimated net water savings (acre-feet/year): 76.58 AF
Estimated total amount of water to be saved (acre-feet): 1,148.74 AF
Estimated Life: 15 years

Benefit/cost ratio of project for applicant: 2.0
Estimated $/acre-feet of water to be saved: $431
(MWD's acre-foot cost of water)

9. Project life (month/year to month/year):

Three year program:

- FY 7/01/03 - 6/30/04
- FY 7/01/04 – 6/30/05
- FY 7/01/05 – 6/30/06

The program will target various cities throughout both the West Basin and Central Basin Municipal Water Districts.

10. State Assembly District where the project is to be conducted:

Central Basin Municipal Water District: 46th, 48th, 49th, 50th, 52nd, 54th, 55th, 56th, 57th, 58th, and 60th

West Basin Municipal Water District: 41st, 42nd, 47th, 48th, 51st, 52nd, 53rd, 54th, and 55th

11. State Senate District where the project is to be conducted:

Central Basin Municipal Water District: 22nd, 24th, 25th, 26th, 27th, 28th, 29th, and 30th

West Basin Municipal Water District: 23rd, 25th, 26th, 27th, and 28th

12. Congressional District(s) where the project is to be conducted:

Central Basin Municipal Water District: 31st, 33rd, 34th, 35th, 37th, 38th, 39th and 41st

West Basin Municipal Water District: 24th, 29th, 32nd, 35th, 36th, and 37th

13. County where the project is to be conducted: Los Angeles County.

14. Do the actions in this application involve physical changes in land use, or potential future changes in land use? No.

A-2 Application Signature Page

By signing below, the official declares the following:

The truthfulness of all representations in the application;

The individual signing the form is authorized to submit the application on behalf of the applicant;

The individual signing the form read and understood the conflict of interest and confidentiality section and waives any and all rights to privacy and confidentiality of the application on behalf of the applicant; and

The applicant will comply with all terms and conditions identified in this Application Package if selected for funding.

_____	_____	_____
Signature	Name and title	Date

A-3 Application Checklist

Complete this checklist to confirm all sections of this application package have been completed.

Part A: Project Description, Organizational, Financial and Legal Information

___X___A-1 Urban Water Conservation Grant Application Cover Sheet
___X___A-2 Application Signature Page
___X___A-3 Application Checklist
___X___A-4 Description of project
___X___A-5 Maps
___X___A-6 Statement of work, schedule
___X___A-7 Monitoring and evaluation
___X___A-8 Qualification of applicant and cooperators
___X___A-9 Innovation
___X___A-10 Agency authority
___X___A-11 Operation and maintenance (O&M)

Part B: Engineering and Hydrologic Feasibility (construction projects only)

___X___B-1 Certification statement
___X___B-2 Project reports and previous studies
___X___B-3 Preliminary project plans and specifications
___X___B-4 Construction inspection plan

Part C: Plan for Environmental Documentation and Permitting

___X___C-1 CEQA/NEPA
___X___C-2 Permits, easements, licenses, acquisitions, and certifications
___X___C-3 Local land use plans
___X___C-4 Applicable legal requirements

Part D: Need for Project and Community Involvement

___X___D-1 Need for project
___X___D-2 Outreach, community involvement, support, opposition

Part E: Water Use Efficiency Improvements and Other Benefits

___X___E-1 Water use efficiency improvements
___X___E-2 Other project benefits

Part F: Economic Justification, Benefits to Costs Analysis

___X___F-1 Net water savings
___X___F-2 Project budget and budget justification
___X___F-3 Economic efficiency

Appendix: Benefit/Cost Analysis Tables

___X___Tables 1; 2; 3; 4a, 4b, 4c, 4d; and 5

A-4 Description of Project

The Central Basin and West Basin Municipal Water Districts (Districts), headquartered in Carson, California, are public agencies that wholesale imported and recycled water to retail water agencies within its respective 227 and 185 square mile service areas.

The Districts are working together with the cities in their service areas to provide the residents with a unique program that combines the installation of free weather-based EvapoTranspiration (ET) controllers with free residential landscape training classes. This proposal requests funding for the capital outlay of 1,200 ET controllers and installation.

The Districts are partnering with the Metropolitan Water District (MWD) to offer their free "El Protector Del Agua" ("The Protector of Water") program to the cities within the Districts' service area. This residential landscape training course will be offered free of charge to the residents of the participating city.

The training portion of this proposal is only an ancillary component that will be used to teach the residents about the benefits of using ET controllers.

The purpose of this program is to outreach to the communities and provide them with training and products necessary to maintain a beautiful water-efficient landscape, conserve water, reduce urban run-off, and improve water quality.

The goals for the Districts are the following:

- To market the program to the top 20% of high residential water users within the Districts' service areas (see A-5 below for District maps).

- To install 1,200 weather-based ET controllers over a three year period to cities throughout the Districts' service area and conserve over 1,148 acre-feet of imported water.

- To teach residents about the importance of water conservation and urban run-off reduction.

- To coordinate with the cities to conduct free residential landscape classes. This component will enhance the program significantly by educating the public about ET controllers, native plants, sprinkler systems, urban-run, and other landscape topics.

- To build positive relationships with local communities, and possibly provide local landscape contractors with an opportunity to learn about the new technology and provide installations.

The total program cost for 1,200 ET controllers and installation is $450,340. Through cost-sharing, the Districts, cities, and water agencies will provide $138,000. The cost-beneficial amount being requested through this proposal is $312,340.

The objective is to encourage the residents to use weather-based ET controllers that conserve water, reduce urban run-off, and improve water quality.

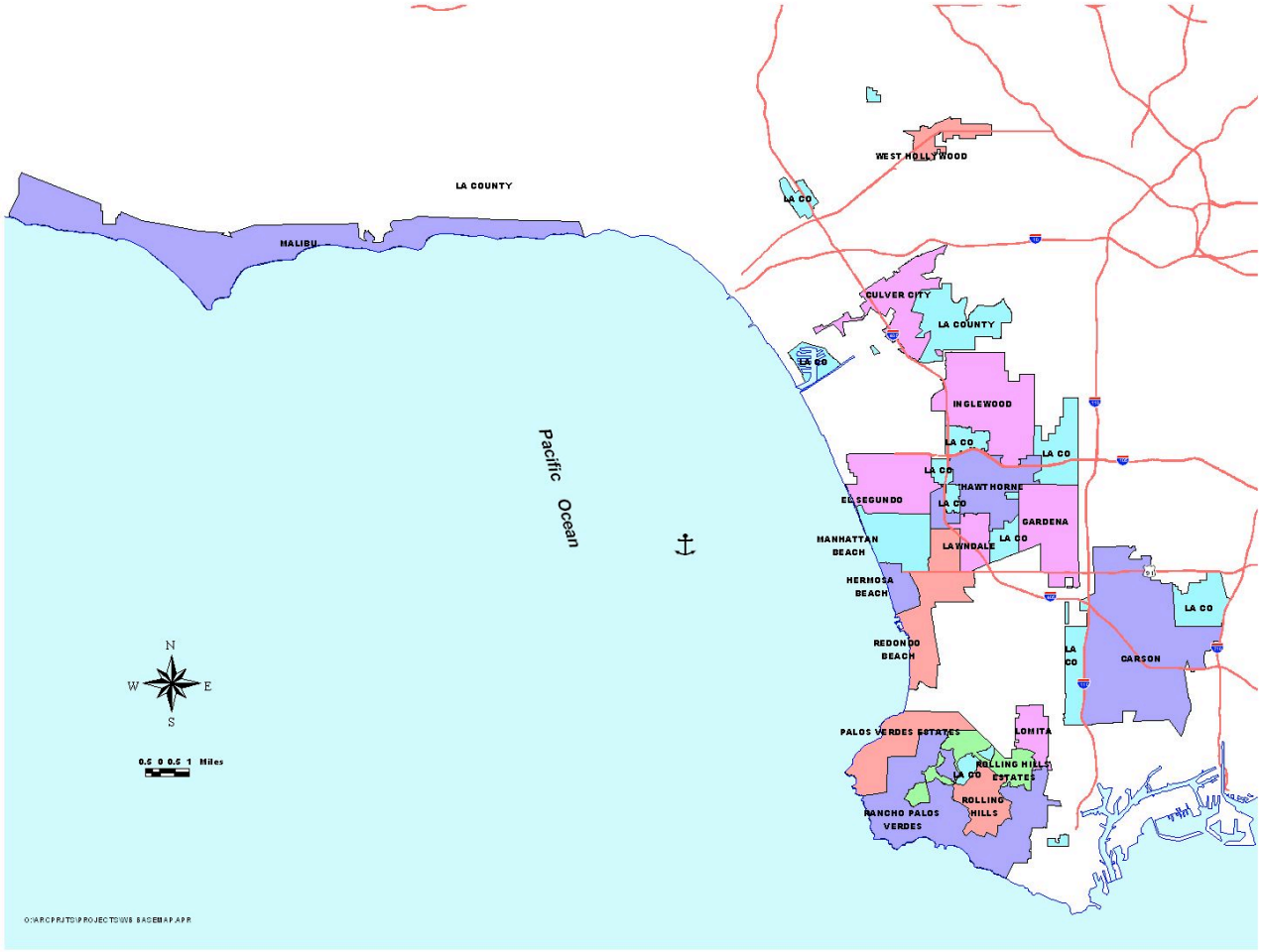
Water conservation and water use efficiency are consistent with the Districts' mission statement to provide a safe and reliable water supply at a reasonable cost. The adopted Urban Water Management plan requires full implementation of all applicable Best Management Practices (BMPs),

A-5 Maps

Below are District maps outlining the cities that are within the Districts' service areas.

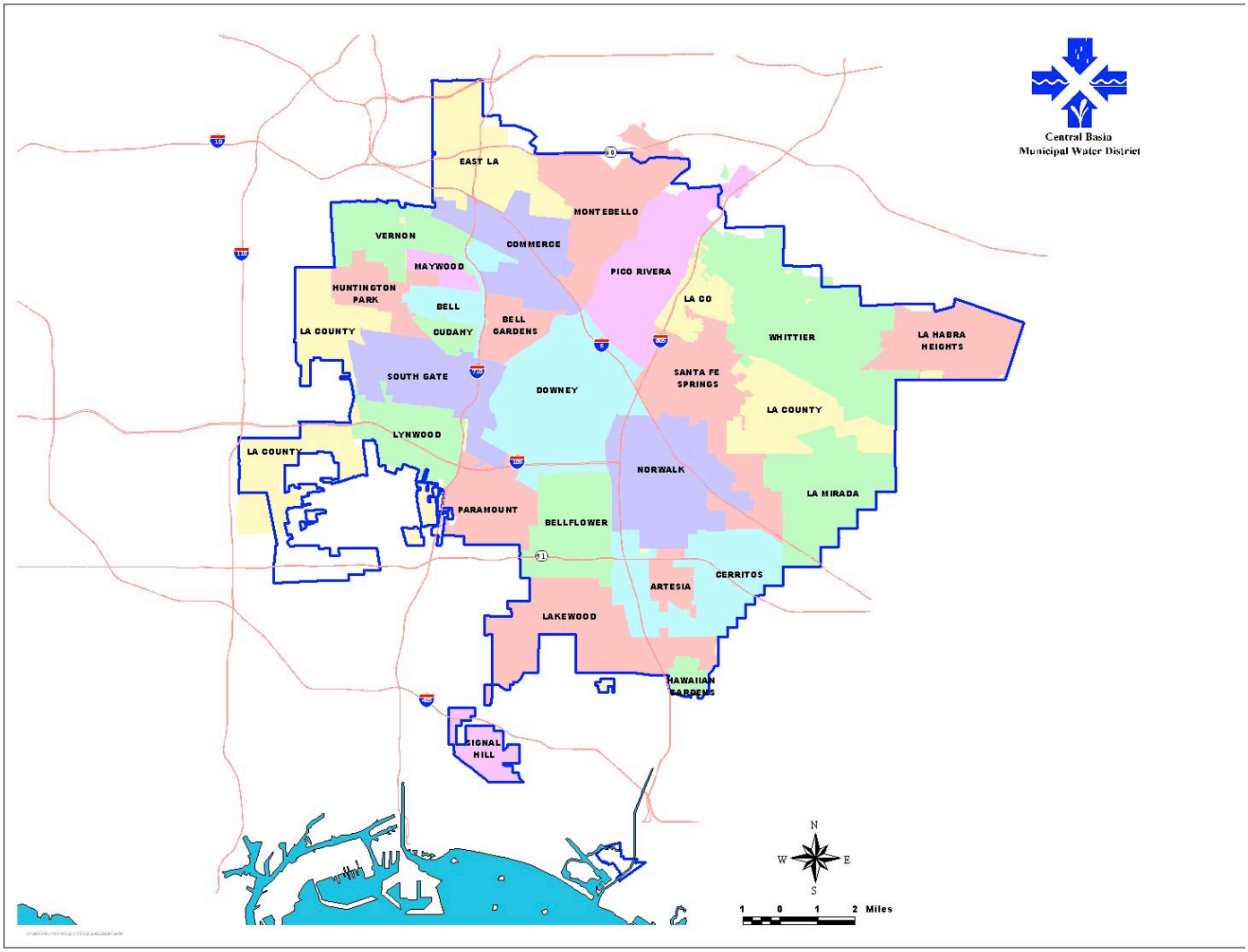
The West Basin Municipal Water District serves a population of 827,000 people living within 17 cities in the South Bay, as well as unincorporated areas of Los Angeles County. The service area is composed of five divisions represented by five publicly elected officials.

West Basin Municipal Water District



Central Basin Municipal Water District

The Central Basin Municipal Water District serves a population of 1.4 million people living within 24 cities in southeast Los Angeles County, as well as unincorporated County areas. The service area is composed of five divisions represented by five publicly elected officials.



A-6 Statement of Work, Schedule

This program will provide residents within the Districts' service areas with free ET controllers and installation. By targeting the top 20% of high water users who have a minimum landscape of 1,950 square feet, the Districts expect to generate the highest possible water savings.

By working with local cities, the Districts are creating local projects that will enable the cities to participate in the program and invite their residents to participate in the free residential landscape training classes. These classes will teach the residents about the benefits of ET controllers, water-efficient sprinklers systems, native plants, and other topics.

Through a funding partnership with the Metropolitan Water District and the cities, the Districts have been able to distribute 5,000 + ultra-low-flow toilets throughout the cities on yearly basis to conserve water. Over the years the Districts have been able to build positive relationships with city officials that will help the success of this program.

This is a 3-year program. Below are the costs and deliverable dates for each fiscal year.

Fiscal Year 2003-2004 (June 30 – July 1)

Major Program Tasks	Implementation Time Frame	Projected Program Cost **w/out** Partnership Funding	Projected Program Funding Request	Yearly Expenditure Projection
Enter in Cost-Sharing Partnerships	3/28/03 – 3/26/04	N/A	N/A	N/A
Market Program to Residents	4/21/03 – 3/31/04	N/A	N/A	N/A
Schedule Classes in four Cities	4/3/03 – 6/2/04	N/A	N/A	N/A
Purchase 400 ET controllers @ $200 plus 15% contingency	10/9/03 – 5/31/04	$92,000	$69,362	$92,000
Pay for 400 Installations @ $125 plus 15% contingency	10/9/03 – 5/31/04	$57,500	$34,480	$57,500
Pay $4.00 for 400 Controller Paging (1yr) plus 15% contingency	10/9/03 – 5/31/04	$1,840	$1,120	$1,840
Conduct Classes	10/9/03 – 5/31/04	N/A	N/A	N/A
Develop Participant Database	11/3/03 – 5/31/04	N/A	N/A	N/A
Conduct Data Analysis for 1 Year	10/01/03 – 8/31/05	N/A	N/A	N/A
Provide Program Results to DWR, MWD, etc.	10/01/03 – 8/31/05	N/A	N/A	N/A

Total Costs		$151,340	$104,962	$151,340

Fiscal Year 2004-2005 (June 30 – July 1)

Major Program Tasks	Implementation Time Frame	Program Cost **w/out** Partnership Funding	Projected Program Funding Request	Yearly Expenditure Projection
Enter in Cost-Sharing Partnerships	11/3/03-5/31/04	N/A	N/A	N/A
Market Program to Residents	11/3/03-5/31/04	N/A	N/A	N/A
Schedule Classes in four Cities	2/2/04-5/31/05	N/A	N/A	N/A
Purchase 400 ET controllers @ $200 plus 15% contingency	5/31/04-6/30/05	$92,000	$69,000	$92,000
Pay for 400 Installations @ $125 plus 15% contingency	5/31/04-6/30/05	$57,500	$34,689	$57,500
Conduct Classes	7/1/04-6/30/05	N/A	N/A	N/A
Develop Participant Database	5/4/04-6/30/05	N/A	N/A	N/A
Conduct Data Analysis for 1 Year	5/4/04-9/29/06	N/A	N/A	N/A
Provide Program Results to DWR, MWD, etc.	5/4/04-9/29/06	N/A	N/A	N/A
Total Costs		$149,500	$103,689	$149,500

Fiscal Year 2005-2006 (June 30 – July 1)

Major Program Tasks	Implementation Time Frame	Program Cost **w/out** Partnership Funding	Projected Program Funding Request	Yearly Expenditure Projection
Enter in Cost-Sharing Partnerships	9/1/05-4/28/06	N/A	N/A	N/A
Market Program to Residents	9/1/05-4/28/06	N/A	N/A	N/A
Schedule Classes in four Cities	9/1/05-5/31/06	N/A	N/A	N/A
Purchase 400 ET controllers @ $200 plus 15% contingency	3/1/06-4/28/06	$92,000	$69,000	$92,000
Pay for 400 Installations @ $125 plus 15% contingency	3/1/06-4/28/06	$57,500	$34,689	$57,500
Conduct Classes	2/1/06-6/30/06	N/A	N/A	N/A
Develop Participant Database	3/1/06-5/31/06	N/A	N/A	N/A
Conduct Data Analysis for 1 Year	3/1/06-9/28/07	N/A	N/A	N/A
Provide Program	3/1/06-9/28/07	N/A	N/A	N/A

Results to DWR, MWD, etc.				
Total Costs		$149,500	$103,689	$149,500

A-7 Monitoring and Evaluation

Program Description	The Districts program manager will be responsible for purchasing the ET controllers, hiring a qualified contractor to install them, monitoring the performance, using a database to track the progress, and evaluating the program.
Target	The top 20% of high water users who have a landscape area of 1,950+ Sq. ft. will be targeted for the program.
Marketing	The Districts' staff working with the cities and retail water agencies will send letters to the top 20% of high water users inviting them to participate in the program. Contractor will conduct a pre-survey visit to make sure that the landscape is 1,950+ in order to qualify for the program.
Customer Registration	Participating customers will register for the program, and will understand their responsibilities. They will agree to have the ET controller installed. They will report any problems to the installation contractor. They will be responsible to pay the monthly $4.00 paging fee (after the first year). The customer will agree to allow the Districts, city, and retail water agency to acquire their water use history and conduct reporting analysis.
Data Needed	Three (3) years of water use history will be acquired and analyzed. District staff will work with the participating city or retail water agency to obtain the information.
Installation Verification	5-10% On-site Inspections. Even though this program is a direct-install, the Districts' staff will still inspect installations to ensure that quality work is being conducted.
Analysis	This is a three-year program. During each program year (after installation of the controller), water usage will be tracked and entered into the database. At the end of each program year, the water usage will be analyzed for reporting purposes.
Results	The results of the analysis will be shared with DWR, MWD, and the participating cities. The report will show: • Participating city / agency • Customer information (name, address, account #) • Installation address, Installation date • ET controller type, and number installed • Square footage at site • Previous years water history averages • ET controller water usage for one year

	• Comparison and analysis from previous years • Whether the water savings goals were reached

As an added bonus to this program, the targeted participant will be invited to attend a free residential landscape training course. They will learn more about the ET controller being installed at their home, sprinkler systems, urban run-off, and native plants. The Districts believe that this component will add to the success of the overall program.

Post Installation Questionnaire

At the end of each program year a postcard will be provided to the participating resident to capture the following information:

• Seen an overall improvement by using the ETcontroller	• Installed drip irrigation
• Installed appropriate sprinkler heads	• Performed maintenance of the sprinkler system
• Reduced / Increased watering times on the controller	• Reduced / Increased water bill
• Removed or reduced turf area	• Redesigned landscape
• Purchased native plants	• Overall Satisfaction
• Etc	• Would recommend

A-8 Qualifications of the Applicant and Cooperators

See attached Resumes. (Appendix A)

A-9 Innovation

The grant proposal would help accelerate the use of the ET controller proven technology in its service area.

This program is innovative in that it combines the installation of free weather-based ET controllers with free residential landscape training classes. It also ties into the current Metropolitan Water District (MWD) region-wide campaign on reducing outdoor water use, and planting native plants. This program will help compliment MWD's regional efforts.

The weather-based ET controllers are innovative in that they receive daily pages to automatically adjust according to the plants watering requirements and moisture in the air. The cost-effective technology provides the following benefits:

- Water savings
- Convenience to the resident
- Improved quality of plants
- Reduced non-point source pollution
- Improved water quality

ET controllers will replace the conventional clock used to control when sprinklers come on and how long the watering cycle continues. The ET controller used in this proposal

receives a signal in the same manner as a pager. The signal originates from a DWR approved CIMIS Station; that measures the Eto rate, or the weather conditions that determine the moisture evaporation rate from the soil and plants. The manufacturer of the ET controller uses the data to send signals to the ET controller in order to adjust the watering cycles to meet the varying plant needs.

The Districts believe that there needs to be an educational component to educate the public about ET controllers. The benefit of this program is that the educational classes are being sponsored by MWD, the Districts, and the cities free of charge. The controllers and program in general will be more effective if the public understands the technology.

A-10 Agency Authority
Address the following five questions pertaining specifically to this application.

1. Does the applicant (official signing A-2, Application Signature Page) have the legal authority to submit an application and to enter into a funding contract with the State? Provide documentation such as an agency board resolution or other evidence of authority.

   The West Basin and Central Basin Boards of Directors have authorized and approved board resolutions for this project. (See Appendix B)

2. What is the legal authority under which the applicant was formed and is authorized to operate?

   In the early 1950's, the agencies charged with preserving the regions underground water supplies and finding supplemental water recommended establishment of the Districts. The recommendation was approved by the voters and the Districts were formed to find supplemental water to bring to the region.

3. Is the applicant required to hold an election before entering into a funding contract with the State?

   No.

4. Will the funding agreement between the applicant and the State be subject to review and/or approval by other government agencies?

   No.

5. Is there any pending litigation that may impact the financial condition of the applicant, the operation of the water facilities, or its ability to complete the proposed project?

   No.

A-11 Operations and Maintenance

This is not a construction project; therefore this section is not applicable.

Application Part B—Engineering and Hydrologic Feasibility

B-1 Certification Statement
B-2 Project Reports and Previous Studies
B-3 Preliminary Project Plans and Specifications
B-4 Construction Inspection Plan

Sections B-1 through B-4 are not applicable.

Application Part C—Plan for Completion of Environmental Documentation and Permitting Requirements

C-1 California Environmental Quality Act and National Environmental Policy Act
C-2 Permits, Easements, Licenses, Acquisitions, and Certifications
C-4 Applicable Legal Requirements

This program is not a construction project; therefore sections C-1 through C-4 are not applicable.

Application Part D- Need for Project and Community Involvement

D-1 Need for the Project

Combined, the Central and West Basin Municipal Water Districts purchase over 475,000 acre-feet of imported water from MWD and provide it to the 41 cities and water agencies through the South Bay and Southeast Los Angeles County areas. MWD receives water that is allocated from the Bay Delta and the Colorado River. Any water conserved by the Districts will directly improve the Bay Delta and the Colorado River Basin.

Over the years, the Districts have conducted numerous programs that focused on indoor water use. Proposition 13 gives the Districts an opportunity to conduct an outdoor residential program that will reduce water use and urban run-off. This project allows the Districts the opportunity to see first hand how effective the weather-based ET controllers work, and are received by the public. The Districts will use this knowledge to continue conducting and improving future outdoor residential programs in its region.

This program has been designed to meet the needs and concerns of various communities, organizations, and environmental groups that are concerned about water conservation and urban run-off. Following are some of the needs it satisfies:

- This program has been designed to satisfy numerous Best Management Practices (BMPs) of the California Urban Water Conservation Council. The Districts have been signatories to the Memorandum of Understanding since

1991. This program meets a portion or all of the following BMPs:

- BMP 1 – Water Survey Programs for Single-Family Residential and Multi-Family Residential Customers – This program meets the outdoor component of the check irrigation system and timer portion of the BMP.

- BMP 7 – Public Information Programs – This program provides the public with free classes that inform them on how to develop a beautiful water-efficient landscape using drought-tolerant plants and ET based sprinkler controller systems.

- BMP 10 – Wholesale Agency Assistance Programs – Through this program the Districts will be able to provide their customers; the cities and water retailers, with financial incentives, and advance water conservation efforts in their communities.

- The Districts have developed water conservation goals as part of its Urban Water Management Plans. By the year 2020, it is the goal of the Districts to reduce water demands by 12 percent in the Central Basin District and by 11 percent in the West Basin District. These reductions will be accomplished by implementing various water conservation programs that are cost-effective, meet the BMPs, and also meet the needs of our sub-agencies and residents. This program will help the Districts meet its responsibility of reducing water demands.

- Efficient landscape watering will lower urban run-off, which will reduce the amount of fertilizer and pesticides that are washed into our oceans.

- Reduce the regions dependence on imported water from the Colorado River, Bay Delta System, and underground water.

- There are some conservation programs that don't work well in certain areas. For example, we have been unsuccessful in distributing ultra-low-flush toilets along the coastal communities that tend to have a higher median income compared to other inland areas. This program would work better in those communities that are concerned about improving their landscapes and reducing urban run-off.

D-2 Outreach, Community Involvement, Support, Opposition

As wholesale water agencies, the Districts have developed their conservation programs with their retail water agencies. The conservation program is strongly supported by these member agencies.

The West Basin and Central Basin Municipal Water Districts (Districts) have partnered with the Metropolitan Water District (MWD) and cities to provide the residents within its service areas with free ET controllers and installation to qualifying residents, and free residential landscape training classes.

The Districts and MWD will be offering the free program to the cities that have been identified as being good candidates for the program. Good candidates include cities

that have larger residential landscapes, and those that have urban run-off issues, and areas that have a need for a residential landscape program.

The Districts and cities will market the program to their residents through a variety of methods such as: city web pages, newsletters, flyers, bill stuffers, door hangers, and other local community means. The residents will contact the consultant hired by MWD to register for the four classes. The city will provide the location for the training.

The Districts and the city will invite local city gardening clubs to participate. They will be asked to provide tips and information about native plants, demonstration gardens, landscape design, etc. Tours will also be scheduled as part of this program to visit local community gardens, nurseries, wetland areas, etc.

The Districts will hire trained professionals who are familiar with weather-based ET controllers to install them. Qualified professionals from the local community will be sought to participate and benefit from the program.

Information regarding native plant dealers will be provided to the class participants. Efforts will be made to find local dealers.

Class size will vary on the interest and facility available. A typical manageable size would be around 50 residents. If the demand is higher, then more classes will be provided to accommodate. The goal is to install all 1,200 ET controllers in order to maximize the water savings.

The Districts will request a database from the City or local water agency to determine who the highest 20% of residential water users are. These residents will be contacted by letter and phone and invited to receive a free ET controller and installation, and also invited to participate in the free training.

This program meets the local goals of cities, sanitation districts, water quality control boards, water agencies, and environmental groups, which is to reduce urban run-off. Non-point contamination is a large problem that needs to be approached from different ways. By implementing this program, we as water professionals, are taking our responsibility seriously and making a difference. By providing plants and turf with the exact amount of water they need, will reduce the amount of water, fertilizer, and pesticides that run into the storm drain and into the ocean. This program will help reduce urban run-off contaminants.

This program also meets MWD's regional plans. MWD has shifted their water savings focus to the outdoors. They are currently running a region-wide campaign that includes our service areas to promote the use of native plants and reducing the amount of water used to irrigate.

This program fits nicely with MWD's campaign and truly supports their campaign, by "actually" teaching the residents about ET controllers, and the different types of native plants, and landscape design. Therefore, MWD's regional (top level) marketing campaign plus the Districts local (grass roots) program will provide a complete program. The regional campaign will support the local program, and vice versa.

The Districts have not identified any negative third party outcomes.

Application Part E—Water Use Efficiency Improvements and Other Benefits

E-1 Water Use Efficiency Improvements

The ET controller study by MWD (Appendix C) indicates that by the year 2020, outdoor water use will account for 59% of water demand.

The Districts realize the water savings that can be achieved through conducting this outdoor residential program.

The MWD study also concluded that the weather-based ET controllers can reduce total household consumption by roughly 57 gallons per household per day, which represents a 10 percent reduction in total use, or 24% outdoor reduction. This savings will help to meet the Districts' Urban Water Management Plan goals of demand-side water conservation.

Besides water savings, the ET controllers do a great job at reducing urban run-off. The controllers water each station according to how much water the plants need depending on plant type and current weather conditions. Over-irrigation contributes to the following problems:

- Over-watering causes the water to go beyond the root zone and is usually wasted and can end up washing down into the storm drain, especially on hill-sides.

- Excessive watering causes urban run-off that usually washes fertilizers and pesticides into the storm drain, and contributes to non-point source pollution.

Water savings through this program will be quantifiable. Studies will be conducted to see how much water savings was achieved by the installation of the ET controllers.

A report was published in June 2001 that shows the water savings associated with the use of ET weather-based controllers (**Appendix C**). The participating agencies were; Irvine Ranch Water District, Municipal Water District of Orange County, Metropolitan Water District of Southern California, Tom Ash, d.d. Pagano, Inc., Network Services, Inc., and Western Policy Research.

Page 7 of the report shows that almost 97% of the ET controller participants reported either improvement or no change in the appearance of their landscapes and all found the ET controller convenient.

This study provides the supporting data for the many benefits and water savings associated with installing ET controllers.

E-2 Other Project Benefits

Other benefits besides water savings include the following:

- Conservation reduces demands on water diversions from the Bay Delta and the Colorado River. When less water is diverted, water quality in the Delta improves and more water is available for the delicate ecosystem that relies on it.

- Partnerships to conserve water are built. The Districts working with MWD will be able to include the local cities, making this program more localized.

- Free ET Controllers and Installation will be provided. To encourage customer participation, the first year of the daily paging service will also be paid through this program. Basically, the customer will get everything for free.

- By attending the free residential landscape classes the resident will learn about the ET controllers and will therefore have a vested interest in the controller and their landscape. They will also learn about water conservation and urban run-off. The four classes will cover the following classes:
    - Basic Landscape Design
    - Landscape Plants
    - Landscape Sprinklers and ET controllers
    - Landscape Watering and Fertilizing

- ET controllers will help in the reduction of urban run-off. Less water, fertilizers, and pesticides will reach our oceans and underground aquifers through soil intrusion. As water professionals, we are taking our responsibility serious.

- Local groups and contractors will be sought to assist with the implementation of the program.

- The program will be heavily marketed to educate the public about DWR and the benefits derived from Proposition 13.

- This program will also encourage the use of native plants. These plants use less water and will have a positive impact on water reduction.

- Local cities will be able to showcase the program and highlight the results of the program in their newsletters and other community information materials.

F-1 Net Water Savings

In one study, various agencies partnered to study the effects of installing weather-based ET controllers. This study can be found in Appendix C, and is called the Residential Weather-Based Irrigation Scheduling: Evidence from the Irvine "ET Controller Study.

The study concludes that "the statistical analysis demonstrates that weather-based ET controllers are very effective at curbing wasteful irrigation practices, or in other words, converting potential into achieved savings." Their findings show that "ET controllers were able to convert almost 85% of the pre-retrofit conservation potential into achieved savings…" The analysis also states that if the top third of high water users is targeted, then a 57 gallon per household water savings per day can be achieved. This could result in a reduction of 10 percent in total use, or 24% of outdoor use.

Quantifiable Water Savings

1,200 controllers x 57 gallons per day x 365 days x 15 year useful-life / 326,000 gallons per acre-foot = 1,148.74 acre-feet water savings.

The figures for both, the 57 gallons per day water savings and 15 year useful product life, were taken from the study referenced in Appendix C.

Avoided Cost of Purchased MWD / Bay-Delta

1,148.74 acre-feet saved x $431 per acre-foot (MWD) = $495,107

According to the study's data and "real" results, this program should provide close to the same results as the previously installed ET controllers sited in the study.

F-2 Project Budget and Budget Justification

Project Budget

3 Year Program - Funding Breakdown

Year 1 - 2003-2004

# of Et Controller	**Cost of Yearly Paging Service $4/mo./device	Cost of Controller	Sub-Total Cost of Controller	Cost of Installation	Sub-Total Cost of Installation	Sub-Total Cost	15% Contingency	Total Cost
100	$400.00	$200	$ 20,000	$125	$ 12,500	$32,900	$ 4,935	$ 37,835
100	$400.00	$200	$ 20,000	$125	$ 12,500	$32,900	$ 4,935	$ 37,835
100	$400.00	$200	$ 20,000	$125	$ 12,500	$32,900	$ 4,935	$ 37,835
100	$400.00	$200	$ 20,000	$125	$ 12,500	$32,900	$ 4,935	$ 37,835

** The $4 per month controller paging service will only be paid for the customer for the first year.
This offer should encourage program participation. The customer will be responsible for future years.

Total Cost	$ 151,340

Year 2 - 2004-2005

# of Et Controller	**Cost of Yearly Paging Service $4/mo./device	Cost of Controller	Sub-Total Cost of Controllers	Cost of Installation	Sub-Total Cost of Installations	Total Cost	15% Contingency	Total Cost
100	N/A	$200	$ 20,000	$125	$ 12,500	$32,500	$ 4,875	$ 37,375
100	N/A	$200	$ 20,000	$125	$ 12,500	$32,500	$ 4,875	$ 37,375
100	N/A	$200	$ 20,000	$125	$ 12,500	$32,500	$ 4,875	$ 37,375
100	N/A	$200	$ 20,000	$125	$ 12,500	$32,500	$ 4,875	$ 37,375

Total Cost	$ 149,500

Year 3 - 2005-2006

# of Et Controllers	**Cost of Yearly Paging Service $4/mo./device	Cost of Controller	Sub-Total Cost of Controllers	Cost of Installation	Sub-Total Cost of Installations	Sub-Total Cost	15% Contingency	Total Cost
100	N/A	$200	$ 20,000	$125	$ 12,500	$32,500	$ 4,875	$

								37,375
100	N/A	$200	$ 20,000	$125	$ 12,500	$32,500	$ 4,875	$ 37,375
100	N/A	$200	$ 20,000	$125	$ 12,500	$32,500	$ 4,875	$ 37,375
100	N/A	$200	$ 20,000	$125	$ 12,500	$32,500	$ 4,875	$ 37,375

Total Cost	$ 149,500

Comments:

CB = Central Basin Municipal Water District

WB = West Basin Municipal Water District

3 Year Program - Total Cost	**$ 450,340**

Funding Partners	Total # of Controller	Total Cost Sharing
MWD ($65 rebate / controller)	1,200	$ 78,000
Districts ($25 / controller)	1,200	30,000
Water Agencies ($25/controller)	1,200	30,000
	Total	$ 138,000

Funding Partners Cost Sharing Amount	$ 138,000
Requested Funding	**$ 312,340**

F-3 Economic Efficiency

The installation of ET controllers will yield benefits to all participants. The program has quantifiable and well as qualifiable benefits.

The participants in this program will receive free ET controllers and installations that will reduce their water consumption, which will reduce their water bill. The participant will also receive the first year's paging service for free. The will also be invited to participate in free residential landscape classes that are being provided free of charge on behalf of MWD and the Districts.

By providing all program benefits free of charge, the Districts believe that participants will be more willing to participate in the program.

Direct Participant Benefits	• Free weather-based ET controllers, Free installation • Free 1st year ET controller paging service • Free residential landscape classes, • Lower water bill, No out-of-pocket cost • Healthier looking plants, Caring for the environment
Indirect Environmental Benefits	• Reduced urban run-off, Reduced non-source pollutants • Conservation, and Improved water quality
Local City Benefits	• Free community services • Participation in a conservation / environmental program • Partnering with local and state agencies to conserve water.
District Benefits	• Water Conservation, Cost-effective outdoor landscape program, Build partnerships with DWR, cities, residents, and others • Meeting Mission Statement goals
Department of Water Resources	• Funding a local cost-effective program • Allowing for the Water Districts and cities to work together on a local conservation program.

The following cost-effective analysis is based on the future avoided cost of Metropolitan Water District water, and the total program cost.

Quantifiable Water Savings

1,200 controllers x 57 gallons per day x 365 days x 15 year useful-life / 326,000 gallons per acre-foot = 1,148.74 acre-feet water savings.

The figures for both, the 57 gallons per day water savings and 15 year useful product life, were taken from the study referenced in Appendix C.

Avoided Cost of Purchased MWD / Bay-Delta

1,148.74 acre-feet saved x $431 per acre-foot (MWD) = $495,107

Cost-Effectiveness (DWR's Perspective, @ $260.28 per controller x 1,200 controllers) **Program Cost / DWR's Funding** $450,340 / $312,340 = 1.44
Cost-Effectiveness (MWD's Perspective, @ $65 per controller x 1,200 controllers) **Program Cost / MWD's Funding** $450,340 / $78,000 = 5.77
Cost-Effectiveness (District's Perspective, @ $25 per controller x 1,200 controllers) **Program Cost / District's Funding** $450,340 / $30,000 = 15.01
Cost-Effectiveness (Cities / Water Agencies Perspective @ $25 per controller x 1,200 controllers) **Program Cost / Funding** $450,340 / $30,000 = 15.01

Appendix- Benefit/Cost Analysis Tables

Table 1: Capital Costs

	Capital Cost Category *(a)*	Cost *(b)*	Contingency Percent *(c)*	Contingency $ *(d)* *(bxc)*	Subtotal *(e)* *(b+d)*
(a)	Land Purchase/Easement				
(b)	Planning/Design/Engineering				
(c)	Materials/Installation (1,200 controllers)	$390,000	15%	$58,500	$448,500
(d)	Structures				
(e)	Equipment Purchases/Rentals				
(f)	Environmental Mitigation/Enhancement				
(g)	Construction/Administration/Overhead				
(h)	Project Legal/License Fees				
(i)	Other - 1 Year controller paging service	$1,600	15%	$240.00	$1,840
(j)	**Total (1) (a + ... + i)**	**$391,600**		**$58,740**	**$450,340**
(k)	Capital Recovery Factor: use Table 6 .1030	.1030		.1030	.1030
(l)	**Annual** Capital Costs (j x k) (3 year program)	$40,335 / 3 yrs = $13,445		$6,050 / 3 yrs = $2,017	$46,385 / 3 yrs. = $15,462

(1) Costs must match Project Budget prepared in Section F-2.

Table 2: Annual Operations and Maintenance Costs

Administration *(a)*	Operations *(b)*	Maintenance *(c)*	Other *(d)*	Total *(e)*
$2,500 / 3 yrs. = $833	$0	$0	$0	$833

Table 3: Total Annual Costs

Annual Capital Costs (1) *(a)*	Annual O&M Costs (2) *(b)*	Total Annual Costs *(c)* *(a+b)*

$15,462	$833	$16,295

(1) From Table 1 line (l)
(2*)* From Table 2 Total, column *(e)*

Table 4: Water Supply Benefits

Total Water Savings (acre-feet/15 years) 1,148.74 AF

Net water savings (acre-feet/year) 76.58

4a. Avoided Costs of Current Supply Sources

Sources of Supply *(a)*	Cost of Water ($/AF) *(b)*	Annual Displaced Supply (AF) *(c)*	Annual Avoided Costs ($) *(d)* *(b x c)*
MWD Supply	**$431**	**76.58 AF**	**$33,006**
Total			**$33,006**

4b. Alternative Costs of Future Supply Sources

No Alternative Programs. This table does not apply.

Future Supply Sources *(a)*	Total Capital Costs ($) *(b)*	Capital Recovery Factor (1) *(c)*	Annual Capital Costs ($) *(d)* *(b x c)*	Annual O&M Costs ($) *(e)*	Total Annual Avoided Costs ($) *(f)* *(d + e)*
Total					

(1) 6% discount rate; Use Table 6- Capital Recovery Factor

4c. Water Supplier Revenue (Vendibility)

Water will not be sold outside the system. No revenue generated from this program. This table does not apply.

Parties Purchasing Project Supplies *(a)*	**Amount of Water to be Sold** *(b)*	**Selling Price ($/AF)** *(c)*	**Expected Frequency of Sales (%)** (1) *(d)*	**Expected Selling Price ($/AF)** *(e)* *(c x d)*	**"Option" Fee ($/AF)** (2) *(f)*	**Total Selling Price ($/AF)** *(g)* *(e + f)*	**Annu Expect Wate Sale Reven ($)** *(h)* *(b x g*
Total							

(1) During the analysis period, what percentage of years are water sales expected to occur? For example, if water will only be sold half of the years, enter 50% (0.5).

(2) "Option" fees are paid by a contracting agency to a selling agency to maintain the right of the contracting agency to buy water whenever needed. Although the water may not be purchased every year, the fee is usually paid every year.

4d: Total Water Supply Benefits

(a) Annual Avoided Cost of Current Supply Sources ($) from 4a, column (*d*)	$33,006
(b) Annual Avoided Cost of Alternative Future Supply Sources ($) from 4b, column (*f*)	N/A
(c) Annual Expected Water Sale Revenue ($) from 4c, column (*h*)	N/A
(d) Total Annual Water Supply Benefits ($) (a + b + c)	$33,006

Table 5: Benefit/Cost Ratio

Project Benefits ($) (1)	**$33,006**
Project Costs ($) (2)	**$16,295**
Benefit/Cost Ratio	**2.0**

(1) From Tables 4d, row (d): Total Annual Water Supply Benefits
(2) From Table 3, column (*c)* : Total Annual Costs

Table 6: Capital Recovery Factor

(Use to obtain factor for Table 1, Line k or Table 4b, Column *(c)*

Life of Project (in years)	Capital Recovery Factor
7	0.1791
8	0.1610
9	0.1470
10	0.1359
11	0.1268
12	0.1193
13	0.1130
14	0.1076
15	0.1030
16	0.0990
17	0.0954
18	0.0924
19	0.0896
20	0.0872
21	0.0850
22	0.0830
23	0.0813
24	0.0797
25	0.0782
26	0.0769
27	0.0757
28	0.0746
29	0.0736
30	0.0726
31	0.0718
32	0.0710
33	0.0703
34	0.0696
35	0.0690
36	0.0684
37	0.0679
38	0.0674
39	0.0669
40	0.0665
41	0.0661
42	0.0657
43	0.0653
44	0.0650
45	0.0647
46	0.0644
47	0.0641
48	0.0639
49	0.0637
50	0.0634

Appendix

Appendix A – Resumes

Appendix

Appendix B – West and Central Basin Board Resolutions

Appendix

Appendix C – Residential Weather-Based Irrigation Scheduling: Evidence from the Irvine "ET controller" Study

Appendix

Appendix D – Letters of Support